

Serial No. 09/551,400
Docket No. ND-342US

2

AMENDMENTS TO THE CLAIMS:

1. (Previously presented) A network synchronization system for a network wherein a plurality of buses are connected in a tree-like configuration by means of a bridge which has a plurality of portals each of which has a function of a node of the IEEE 1394 standard and to each of which a single bus which complies with the IEEE 1394 standard is connected, said network synchronization system comprising:

a network clock reference node functioning as a reference clock source for the entire network and as a network cycle master as prescribed in the IEEE 1394 standard, one of the portals included in said network being set as said network clock reference node; and

a local clock reference node provided for each of the other of said plurality of buses other than the bus to which said network clock reference node is connected and serving as a local cycle master prescribed in the IEEE 1394 standard for the bus to which said local clock reference node is not connected, one of the portals connected to said each of the other buses of said plurality of buses which has the least number of hops of nodes up to said network clock reference node being set as said local clock reference node, said local clock reference node including a module for synchronizing a cycle frequency thereof with a cycle frequency of said network clock reference node,

wherein said network clock reference node and each said local clock reference node exercise a role decision process to determine its timing role and to set itself up in its timing role.

2. (Previously presented) A network synchronization method for a network wherein a plurality of buses are connected in a tree-like configuration by means of a bridge which has a plurality

Serial No. 09/551,400
Docket No. ND-342US

3

of portals each of which has a function of a node of the IEEE 1394 standard and to each of which a single bus which complies with the IEEE 1394 standard is connected, said network synchronization method comprising:

determining a network clock reference node which functions as a reference clock source for the entire network and as a network cycle master as prescribed in the IEEE 1394 standard;

determining a local clock reference node which functions as a local cycle master which synchronizes a cycle frequency thereof with a network cycle frequency of said network clock reference node;

in each of said network clock reference node and the local clock reference node or nodes, setting all of the other portals than said network clock reference node or the local clock reference node connected to the bus to which said network clock reference node or the local clock reference node is connected as non-reference nodes; and

in each of said network clock reference node and said non-reference nodes, setting all of the other of said plurality of portals of the bridge to which said network clock reference node or the non-reference node is connected as the local clock reference node.

3. (Previously presented) A network synchronization method as claimed in claim 2, wherein said determining a network clock reference node is performed manually by a manager of said network.

4. (Original) A network synchronization method as claimed in claim 2, wherein each of said network clock reference node and said non-reference nodes transmits a synchronizing signal to

Serial No. 09/551,400
Docket No. ND-342US

4

all of the other local clock reference nodes of the bridge to which said network clock reference node or the non-reference node is connected, and each of the local clock reference nodes uses the received synchronizing signal to synchronize the cycle frequency of the local clock reference node itself with the cycle frequency of said network clock reference node.

5. (Original) A network synchronization method as claimed in claim 4, wherein the synchronizing signal is a signal of a 32-bit width of a CYCLE_TIME register of the mode from which the synchronizing signal is transmitted.

6. (Original) A network synchronization method as claimed in claim 4, wherein the synchronizing signal is a signal of a 25-bit width of the lowest order 25 bits of a CYCLE_TIME register of the node from which the synchronizing signal is transmitted.

7. (Original) A network synchronizing method as claimed in claim 4, wherein the synchronizing signal is a signal of a 12-bit width of the lowest order 12 bits of a CYCLE_TIME register of the node from which the synchronizing signal is transmitted.

8. (Original) A network synchronization method as claimed in claim 4, wherein the synchronizing signal is a signal of a 32-bit width of a CYCLE_TIME register of the node from which the synchronizing signal is transmitted or of a 25-bit width of the lowest order 25 bits or a 12-bit width of the lowest order 12 bits of said CYCLE_TIME register, and said local clock reference node periodically performs control of increasing or decreasing a cycle_offset field of the CYCLE_TIME register of said local clock reference node with a fixed number so that a

Serial No. 09/551,400
Docket No. ND-342US

5

difference between a portion of said CYCLE_TIME register of said local clock reference node having an equal bit width to that of the synchronizing signal and the value of the synchronizing signal may be fixed.

9. (Original) A network synchronization method as claimed in claim 8, wherein a period in which the control is performed is equal to a time for 3,072 clocks of clock source of 24.576 megahertz included in the local clock reference node.

10. (Original) A network synchronization method as claimed in claim 4, wherein the synchronizing signal is a pulse signal which is generated at a timing at which the value of a cycle_offset field of a CYCLE_TIME register of the node from which the synchronizing signal is transmitted becomes equal to a predetermined value.

11. (Original) A network synchronization method as claimed in claim 10, wherein the predetermined value is one of integers equal to or greater than 1,000 but equal to or smaller than 3,070.

12. (Original) A network synchronization method as claimed in claim 10, wherein said local clock reference node includes a counter which counts up with a clock source of 24.576 megahertz and returns its count value to 0 when the count value becomes equal to 3,071 but is set to a predetermined value when the pulse signal is received, and periodically performs control of increasing or decreasing the cycle_offset field of the CYCLE_TIME register of said local clock reference node with the fixed number so that the difference between the count

Serial No. 09/551,400
Docket No. ND-342US

6

value of said counter and the value of the cycle_offset field of the CYCLE_TIME register may be equal.

13. (Original) A network synchronization method as claimed in claim 10, wherein the local reference node performs, each time the pulse signal is received, control of increasing or decreasing the cycle_offset register of the CYCLE_TIME register thereof with a fixed number so that the value of the cycle_offset field when the pulse signal is received may be equal to a predetermined value.

14. (Previously presented) A network bus bridge node, comprising:

- a plurality of portals; and

- a role decision module that determines a timing role for each said portal and sets each said portal up in accordance with said determined role.

15. (Previously presented) The network bridge node of claim 14, wherein said bus bridge node comprises an IEEE 1394 standard serial bus interface.

16. (Previously presented) The network bridge node of claim 14, wherein said timing role comprises at least one of:

- a network cycle master (NCM) portal;

- a local cycle master (LCM) portal; and

- a dependent portal.

Serial No. 09/551,400
Docket No. ND-342US

7

17. (Previously presented) A network comprising:

a plurality of IEEE 1394 buses; and

at least one bridge to interconnect said plurality of buses into a single network,

wherein each of said at least one bridge comprises:

a plurality of portals; and

a role decision module that determines a timing role for each said portal and sets each said portal up in accordance with said determined role.

18. (Previously presented) The network of claim 17, wherein said timing role comprises at least one of:

a network cycle master (NCM) portal;

a local cycle master (LCM) portal; and

a dependent portal.

19. (Previously presented) A method of setting up a network timing for a network comprising a plurality of IEEE 1394 buses and at least one bridge to interconnect said plurality of buses into a single network, said method comprising:

for each said at least one bridge, exercising a timing role decision module to determine a timing role for each portal in said bridge; and

setting up each said portal in said at least one bridge in accordance with a determination from said timing role decision module.

Serial No. 09/551,400
Docket No. ND-342US

8

20. (Previously presented) The method of claim 19, wherein said timing role comprises at least one of:

- a network cycle master (NCM) portal;
- a local cycle master (LCM) portal; and
- a dependent portal.